The importance of ember and flame entry into vents during wildfires has resulted in the development of vents designed to resist the intrusion of embers and flame. This development has been encouraged by language in Chapter 7A of the California Building Code.

This photograph shows the upper part of a combustible wall. Three frieze-block vent holes can be seen in one section of blocking.

Chapter 7A vent requirements:

Chapter 7A says that vents must resist the intrusion of embers and flames, or that they shall be protected by corrosion resistant noncombustible wire mesh screen with ⁄⁄ openings. 1/8⁄ mesh is also allowed. Vent designs that incorporate plastic components would not comply with the ⁄noncombustible wire mesh screen⁄ language in Chapter 7A.

Chapter 7A language also specifies that vents cannot be used in an eave application unless that vent has been shown to resist the intrusion of embers and flame. Although there are a now few vents that have been accepted for use by the California OSFM, a design that incorporates two sets of through roof vents, one set for inlet air located near the roof edge, and another for outlet air located near the ridge (as shown here), has been used. Modifications to Chapter 7A that would provide for more prescriptive measures for complying are currently being considered by the California Building Standards Commission.

Currently there isn⁄t an accepted procedure to evaluate ember intrusion, but an American Society for Testing and Materials (ASTM) task group is currently developing a standard test procedure.

Four vents have recently been accepted for use by the Office of the State Fire Marshal ⁄ these vents can be used in applications where ⁄ember and flame intrusion⁄ resistance is required. These vents typically use a combination of screening and other design features to resist intrusion of embers and flames. Information regarding these vents has been posted on the OSFM site (scroll down this page and click on ⁄Information on Product Compliance Policy for Wildland Urban Interface⁄ in the Building Materials Listing Program section).

The vent shown here (Vulcan) uses screening on the front and back of the honeycomb matrix. This matrix is coated with an intumescent paint that swells when contacted by flames.

The Fireguard vent uses screening and a fused-link. The fused-link device is shown in the photo inset. Activation of the fused-link causes a metal door to close.

The Brandguard vent uses a baffle design.

O'Hagin's makes low profile through-roof vents.

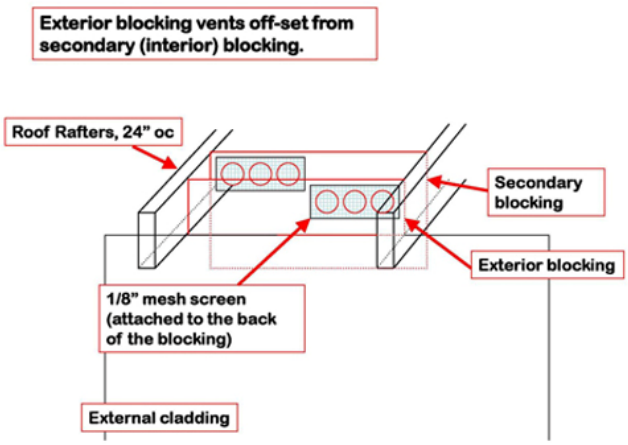
Except for corrosion resistant metal language, Chapter 7A doesn't restrict through-roof vents. Still, O'Hagin has submitted testing information to OSFM, and has been accepted as an 'ember and flame resistant' vent.

Vents accepted by the OSFM have provided testing information that was conducted by an accredited fire testing laboratory. Testing has evaluated the ability of a vent to resist intrusion of embers and flames. Since vents can be exposed to embers, without being exposed to flames, separate tests are run.

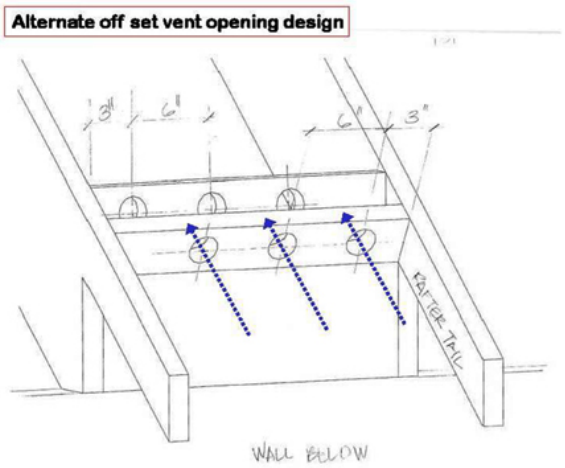
In addition to information regarding ember and flame intrusion resistance, you should also be looking at available air flow information. This is normally given in "percent net free area" and provides information on how much area the wire (or other device(s) used in the vent design) is occupying. For comparison purposes, "" mesh screen has a net free area of 81%. 1/8" and 1/16" mesh screen have net free areas of 75% and 71%, respectively. Screening with smaller openings uses smaller diameter wire.

Some alternative (but still traditional) vent options have been developed. These are shown in the next several photographs. None have been tested to evaluate performance, and done of the following have been accepted for use by OSFM. They are included here to show the range of venting concepts that have been discussed.

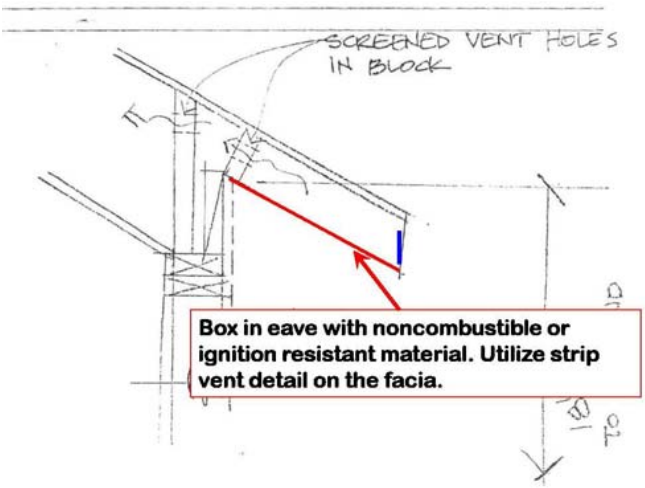
In this diagram, interior and exterior blocking with off-set frieze-block vents. The interior surfaces could be coated with intumescent paint.



In this diagram, interior and exterior blocking with an alternative design for off-set frieze-block vents. The interior surfaces could be coated with intumescent paint.



In this diagram, the eave has been enclosed, and a strip vent installed in the fascia. This is arguably a more severe exposure – the fascia board cannot serve as a barrier to impacting embers.



An example of soffit /eave strip vent in the fascia board. This design is on a home, and so was probably approved for use by the local building official.

A diagram of an end view of a louvered gable end. The louvers traditionally have a downward orientation to minimize entry of rain. In this diagram an upward facing louver has been added to resist entry of embers and flame. The downward oriented leg would have to extend over the upward oriented leg. Net free area would be a function of the width of the gap between the upward and downward oriented legs.